ABSTRACT OF THE DISCLOSURE

An EGR-gas temperature estimation apparatus for an internal combustion engine which has an exhaust circulation pipe and an EGR-gas cooling apparatus. The estimation apparatus obtains the cooling efficiency ηegr of the EGR-gas cooling apparatus from the temperature Tex of EGR gas at the inlet of the exhaust circulation pipe and the flow rate Gegr of the EGR gas, and obtains the temperature THW of engine cooling water, used as a coolant for the EGR-gas cooling apparatus. Subsequently, the estimation apparatus calculates the temperature Tegr of the EGR gas at the outlet of the exhaust circulation pipe by the expression Tegr = Tex - ηegr·(Tex - THW). Since the cooling efficiency ηegr greatly changes depending on the EGR-gas flow rate Gegr and the EGR-gas temperature Tex, the estimation apparatus can accurately estimate the cooling efficiency ηegr, and therefore can accurately estimate the EGR-gas temperature Tegr.